

Does a Dynamical System Lose Energy by Emitting Gravitational Waves?

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Abstract

We note that Eddington's radiation damping calculation of a spinning rod fails to account for the complete mass integral as given by Tolman. The missing stress contributions precisely cancel the standard rate given by the 'quadrupole formula'. This indicates that while the usual 'kinetic' term can properly account for dynamical changes in the source, the actual mass is conserved. Hence gravity waves are not carriers of energy in vacuum. This supports the hypothesis that energy including the gravitational contribution is confined to regions of non-vanishing energy-momentum tensor T_{ik} .

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